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some other contrivance, but the passing of men, horses and carriages in and out of the room was too much for the nerves of the builder and it was abandoned when about two-thirds finished.

## THE BIRDS OF SAN MARTIN ISLAND, LOWER CALIFORNIA

By HOWARD W. WRIGHT

WITH SIX PHOTOS BY THE AUTHOR

ON THE EVENING of July 5, 1913, the sloop "Siwash", with Messrs. J. R. MacIntock, W. S. Wright, E. W. Roche, F. E. McClure and the writer aboard, slipped quietly into a little bay, known as Hassler's Cove, located in the island of San Martin, Lower California. This island is situated about two hundred and forty miles south of San Diego, lies about four miles off-shore, and is ten or twelve miles to the northwest of San Quentin Bay. It is the result of a volcano that has shoved its peak above the sea, forming a round

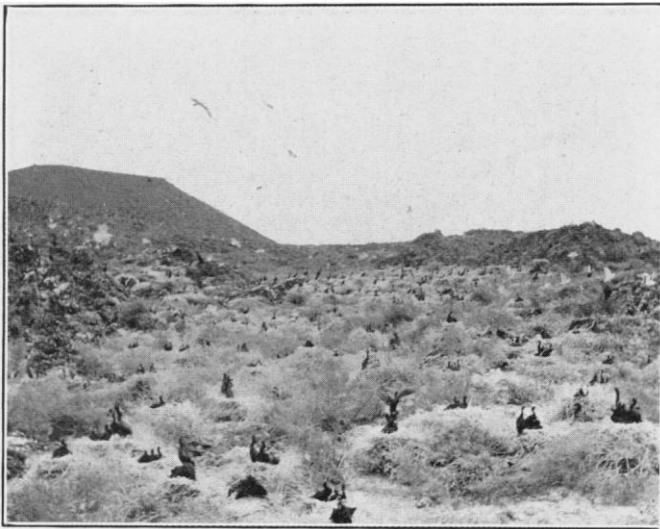


Fig. 60. PORTION OF FARALLON CORMORANT ROOKERY ON SAN MARTIN ISLAND, LOWER CALIFORNIA

island about a mile and a half in diameter, with a small bay situated on the northeast side. There is a well-formed cone in the center, which rises to a height of about five hundred feet.

On the night of our arrival we were greeted with a strong stench of guano, which gave promise of large bird colonies; for the other islands we had visited did not smell badly until we were actually among the birds. We anchored too close to shore and as a consequence were awakened about three-thirty A. M. by the keel scraping on the ground. We were well repaid for the trouble of arising at this hour, however, for we heard the swish of many wings long before daylight, and with the first streaks of dawn we beheld a sight that will long be remembered. From the hills there poured a steady stream of cormorants, flying

about eight or ten abreast. This stream poured from these hills continuously and reached as far as we could see, toward the bay of San Quentin. The stream was like a great black ribbon that waved in the breeze and reached to the horizon. It was truly a wonderful sight. The birds kept coming as though there were no limit to their numbers.

At about seven-thirty a stream began to return, each individual heavily laden with fish. The ribbon of birds was now double—one part leaving and the

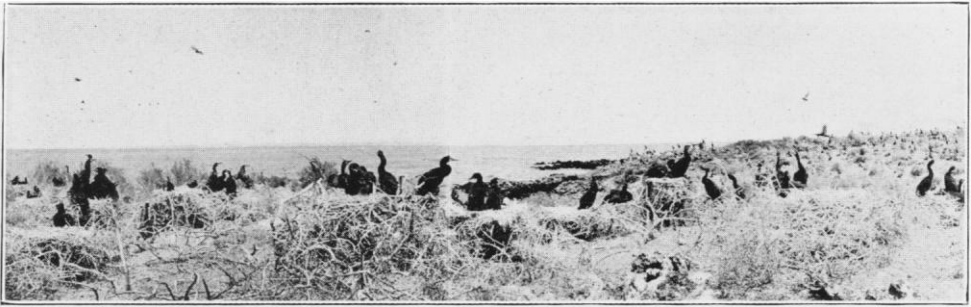


Fig. 61. PORTION OF FARALLON CORMORANT ROOKERY ON SAN MARTIN ISLAND, LOWER CALIFORNIA

other returning. The flow of birds was continuous during the daylight hours of each day we were there. The flow was unbroken—simply one steady stream going, all day, and a steady stream returning.

On landing we found a nice sand beach, but very rugged and rocky hills. Birds were everywhere: Little birds, big birds, old and young, each trying to make more noise than his neighbor. They reached for us from all sides, their incessant calling was deafening, and the stench was nearly suffocating. We spent the next few days in exploring the island, taking notes, estimating the number of

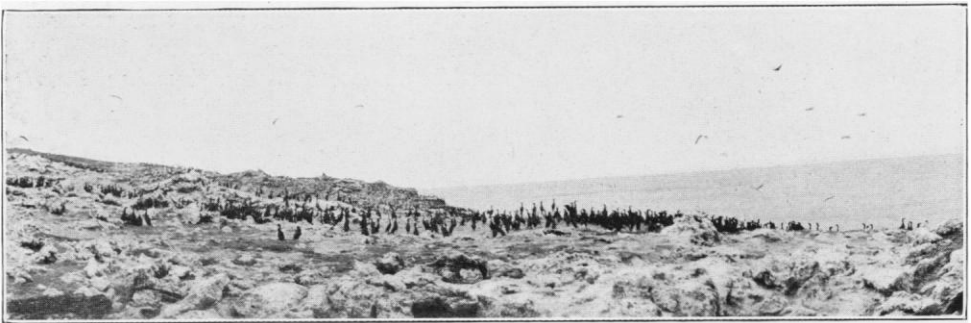


Fig. 62. FULLY GROWN YOUNG BRANDT CORMORANTS, PART OF COLONY ON SAN MARTIN ISLAND, LOWER CALIFORNIA

cormorants and attempting to find the breeding place of petrels. We were very much disappointed in not finding these latter birds breeding.

Following is a list of birds seen, together with a few notes on each of the species:

**Brachyramphus hypoleucus.** Xantus Murrelet. Heard each evening in the bay. Several sighted near-by on the way to San Quentin.

**Larus occidentalis.** Western Gull. Very numerous. They seem to breed early

here in order to be through with their family duties by "cormorant season", as we found very few small young. Whenever we went anywhere about the island a large band of these white pirates followed us. They were very tame and would swoop down to destroy eggs and eat young before our very faces.

I was disgusted, once, in seeing a gull carry a struggling young cormorant off by the neck. The youngster weighed about half a pound, but the gull swallowed him whole in mid-air. The last I saw of the gull, the cormorant was still kicking, in the gull's throat.

Another gull flew down near us and leisurely gobbled up a brood of four young cormorants. The rest of the youngsters showed no fear at the fate of their brothers and sisters but sat quietly and awaited their turn. I placed a camera, with a string attached to the shutter, on a rock near a nest of young cormorants, hoping to get a picture of a gull eating the young, but I was disappointed, as the old cormorant returned first.

**Larus heermanni.** Heermann Gull. Several seen about the island.

**Phalacrocorax auritus albociliatus.** Farallon Cormorant. Present in vast numbers. About 99 per cent of the bird population was made up of this and the following species. The Farallon Cormorant nested farther inland than the Brandt. Following are a few of our estimates as to the number of birds present, and the amount of fish consumed each day by this colony.

The island is a mile and a half in diameter. The area is, then, 1.76 square miles. The breeding area only reaches inland a half mile on all sides; therefore there is a circle in the center, half a mile in diameter, which contains very few nests. The area of this circle is .19 square miles. Subtract this from 1.76 and we have 1.57 square miles, or the area covered by colonies. Call it 1.50 sq. mi., roughly. There are 27,878,400 square feet in a square mile, so that the breeding district contains, approximately, an area of 34,848,000 square feet. In many little hollows, where the limits of a colony were bounded by rocks, we counted the nests and then measured the area enclosed. We then measured, roughly, the area between that colony and the next, and so on until we got several colonies. We then took the number of square feet over which we had traveled and divided it by the number of nests seen and we found it to average about one nest to every 100 square feet. There were several thousand Brandt Cormorants, which had left their nests and were standing around in droves. These we did not include in our estimate, as they were impossible to count.

Allowing, then, one nest to every 100 square feet, we would have 348,480 nests included in the inhabited area. Each nest represented, on an average, three young and two adults. We found two young sometimes, but also found many more nests with four young. Allowing three young and two adults to each nest,

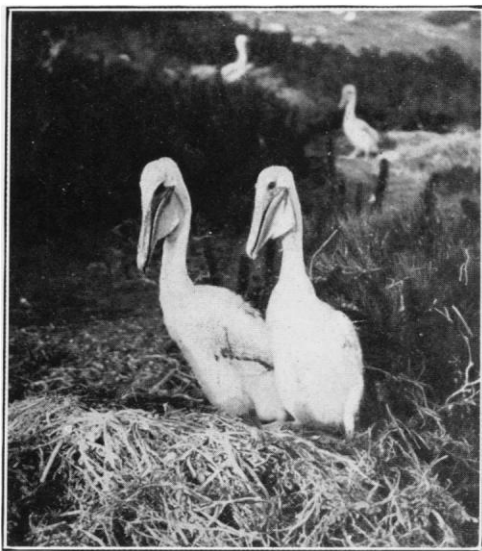


Fig. 63. YOUNG CALIFORNIA BROWN PELICANS, ON SAN MARTIN ISLAND, LOWER CALIFORNIA.

we figured about 1,800,000 birds, as the population of the island. The gulls were not considered in this estimate, as their young were too scattered and the nests too hard to locate.



Fig. 64. YOUNG OSPREY, SAN MARTIN ISLAND, LOWER CALIFORNIA

not so numerous as the last. On the north side the young gathered in big droves and resembled Penguins as they tried to waddle out of our way.

**Pelecanus californicus.** California Brown Pelican. Nesting in considerable numbers on the southern shores.

**Ardea herodias.** Great Blue Heron. Several pairs were breeding in a hollow on the southeast side. There were five nests containing three young each.

**Haematopus frazari.** Frazar Oystercatcher. Several seen along the shores.

**Haematopus bachmani.** Black Oystercatcher. Fairly abundant along sheltered portions of the shores. Several found on a little lagoon on the east side. They appeared to be breeding but no nests were found.

**Pandion haliaetus carolinensis.** American Osprey. There are about thirty pairs breeding on this island. We counted thirty-five nests, one containing two partly grown young. The birds used the other nests as "look-outs."

**Aluco pratincola.** Barn Owl. My father flushed a "big yellow owl" from a blow-hole in the lava on the south side.

**Salpinctes obsoletus.** Rock Wren. Very abundant and very tame. Were easily approached for photographic purposes.

We became very much interested in estimating the amount of fish these birds consumed per day. We noted the amount each young cormorant threw up when molested, and found on several occasions a bunch of fish as big as a man's two fists. This mass was generally composed of surf fish, smelt and sardines. I have heard of other estimates of from three to six sardines a day for a cormorant, so I consider a half pound of fish a day very conservative.

Allowing half a pound of fish a day for each of the 1,800,000 birds, the entire population would consume about four hundred tons a day or about ten thousand tons a month! The fishing was done in San Quentin bay, exclusively, but in that bay and in Hassler's Cove, on the island, fish were found very plentiful, and always hungry, showing that the birds do not seriously lessen the number of fish.

**Phalacrocorax penicillatus.** Brandt Cormorant. Present in large numbers, though

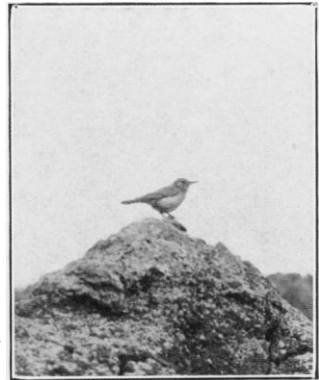


Fig. 65. ROCK WREN, SAN MARTIN ISLAND, LOWER CALIFORNIA.